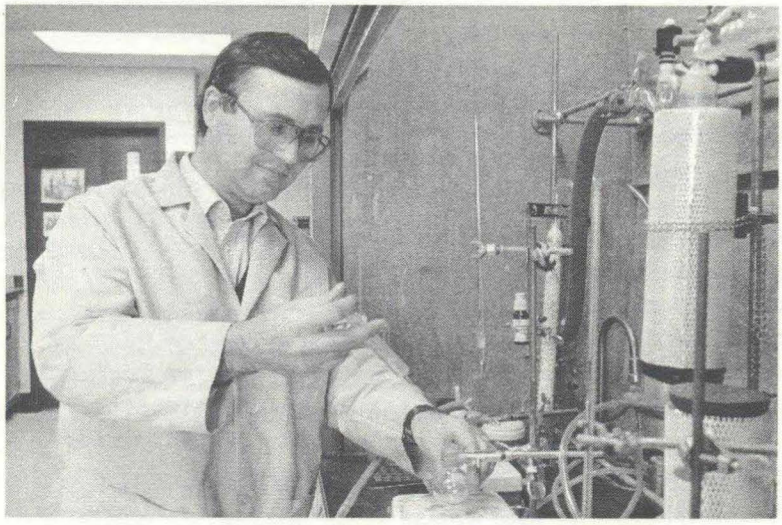
UMD Chemistry Alumni Newsletter

TRANSITIONS



Dr. Viktor Zhdankin

A Pot of Gold . . .

The search process to fill a vacancy in the Chemistry faculty was successfully concluded last spring with the appointment of Dr. Viktor Zhdankin. Viktor, a person in his mid-thirties, brings a record of academic performance, research accomplishment and commitment to teaching excellence that is enviable by any standard (e.g. honors as an undergraduate at Moscow State University; over 110 refereed publications on his research on the organic chemistry of iodine(III), xenon(II), selenium (IV) and phosphorous(V) and on the synthesis of novel-substituted acetylenes; honors as outstanding teacher while an instructor at the University of Utah). Viktor, his wife Olga, who also holds a degree in chemistry, and sons Vasily and Vladimir are reacquainting themselves with Duluth after an initial visit by Viktor to UMD (1988) as an IREX visiting scientist.

Viktor's energy and sense of humor are holding up quite well as he and the department deal with record numbers of students in organic chemistry. In addition, the lights are on late in his laboratory as he begins to re-establish his active research program at UMD.

Welcome!

Biochemistry Degree offered in '94

Beginning in September, 1993 the Department of Chemistry added the B.S. degree program in Biochemistry and Molecular Biology to its offerings. Planning for this joint venture with the Department of Biochemistry and Molecular Biology of the UMD School of Medicine began several years ago and culminated in 1993 with the approval by the Minnesota Higher Education Coordinating Commission and the Univer-

Degree, Continued on Page 3

Also, inside this issue . . .

What's News with Dr. Tsai

Dear Friends of the Department of Chemistry,

On behalf of the faculty and staff in the department, I want to thank so many of you who responded to our first issue of "Transitions" with news of your careers and personal lives, and to those of you who so generously contributed to our Chemistry Development Fund.

Our undergraduate enrollment continues to grow as well as the number of chemistry graduates with nineteen B.S. and six B.A. majors completing their degrees during 1992-1993. Starting this year, we will be graduating B.S. - Biochemistry and Molecular Biology students. This BMB program, the culmination of several years of planning and development, adds an important dimension to our undergraduate curriculum.

Weak national and state economies have forced the university to make hard retrenchment choices and have prevented the growth of our budgets. As graduates of this department, you have indicated your willingness to support our objectives through your contributions. This shared partnership is one we value and want to nurture. In January, a representative of the department will be calling you to ask you to enhance our educational mission by contributing to the Chemistry Development Fund. I encourage you to make a difference in our program by indicating that your gift be designated for one of these departmental priorities:

1. Summer undergraduate research program. From mid-June to mid-August, fifteen undergraduate students from UMD and other institutions joined faculty research groups for a ten-week period to carry out research on a variety of topics (see p. 4). Good chemistry, recreational and social activities and valued friendships characterized the program outcomes and we are enthusiastic about continuing this opportunity.

2. Laboratory instruments and equipment. Over the last year some of your gifts were used to purchase a powerful molecular modeling software program for our inorganic and physical chemistry upper division and graduate students, and an enhancement to our NMR spectrometer so essential in our organic and inorganic programs.

We would be pleased to hear from you or, better yet, show you around the department.

Sincerely yours,

Bilin P. Tsai

Bilin P. Tsai
Professor and Head,
Department of Chemistry

International Activities. . .

The faculty continues to have extensive collaboration with their colleagues in other countries. The majority of the contacts have been with Brazil, Canada, China and Russia.

Brazil - It was 25 years ago this December that the interaction between the UMD Chemistry Department and the University of Sao Paulo (Brazil) began. Larry Thompson spent all of 1969 as a Visiting Professor in Sao Paulo and followed that with a number of visits to various Brazilian universities including one last January and February sponsored by the National Research Council in Brazil. A number of the students that took his courses in 1969 are now leading professors in universities in the states of Ceara, Pernambuco, and Sao Paulo. The scientific work in this exchange has included various aspects of the chemistry and physics of the rare earth elements (Brazil has substantial deposits of rare earth-bearing minerals). In August, Professor Osvaldo Serra and Professor Sidney Ribeiro of the University of Sao Paulo in Ribeirao Preto and Araraquara respectively, visited UMD. Dr. Thompson is the scientific father of Professor Serra and the scientific grandfather of Professor Ribeiro.

Canada - Collaborative research efforts between Vince Magnuson and Drs. Dave Holah and Alan Hughes, Department of Chemistry, Lakehead University, Thunder Bay, Ontario continue to produce new and interesting homo- and hetero-metallic transition metal complexes containing carbon monoxide or hydride and bis(diphenylphoshino) methane (dppm). For example, simple one or two step synthetic reaction processes have resulted in the preparation and subsequent characterization of a number of complexes of palladium, nickel and iron. The interest in these complexes is both their potential utility as catalytic reagents, and in the assembly of metal cluster complexes.

China - Bob Carlson renewed the collaborative research program with China that has been supported by the Environmental Protection Agency (EPA). The new arrangement will involve scientific visits from China's National Environmental Protection Agency (NEPA) staff to learn methods that can be applied to analyzing toxic effluents in both North and South China (e.g. Harbin and Nanjing). He also hosted a visiting scholar from the Research Center for Eco-Chemical Sciences (Mrs. E Wu) who has successfully developed polymeric substrates that will selectively trap reactive mutagens present in complex environmental samples.

Russia - Some of the most active collaboration was with Russia. This included:

- The participation of an undergraduate student (Ruslan Arbit) from the Russian Chemical College (Moscow) in our Summer Undergraduate Research Program.

- The presence of Dr. Irina Smoliakova in Ron Caple's laboratory. Dr. Smoliakova is developing new synthetic approaches to thiosugars and carbon glycosides.

- The development of selective ion-molecule reactions in a mass spectrometer to identify mutagens in the effluent of a gas chromatograph and on the development of new synthetic approaches to lactone antibiotics by Drs. Boris Rosynov's and Natalia Kobrina's research in Bob Carlson's laboratory.

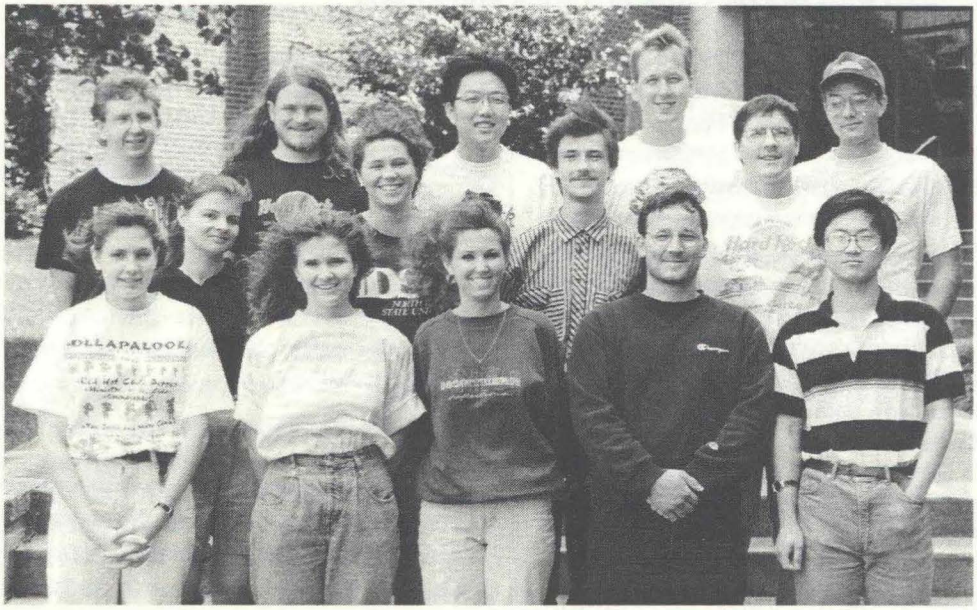
- There were also visits from Drs. Vadim Melnichuk (St. Petersburg), Valerie Petrosyan (Moscow), Ernest Ivanter(Petrosavodsk) and Leonid Ryzkov (Petrosavodsk) as part of a collaborative research effort to understand the processes impacting the world's large freshwater lakes.

Degree, *continued from Page 1*

sity of Minnesota Board of Regents. This degree will now give visibility to what has become an exciting and very important area of modern chemistry.

The faculties of both departments will contribute to the program and each has added to its staff an Assistant Professor [Drs. David Eide, biochemistry and Kathryn McLane, chemistry] with expertise in this area. The course of study has been structured so that the first two years are essentially common to majors in Biology, Chemistry, and Biochemistry/Molecular Biology. In addition to the usual courses in chemistry (48 cr), math (10 cr), and physics (15 cr), students will also include 28 credits in biology courses (18 cr in cell and molecular biology) and 12 cr in biochemistry courses in their programs. Included are two new laboratory courses in biochemistry and molecular biology. The new program is expected to graduate up to 24 students per year. LCT

1993 Chemistry Summer Undergraduate Research Program



1993 UMD Summer Undergraduate Research Program: *Back row (l to r) Dana Reed (UMD), Eric Maki (UMD), Shao-En Ong (UMD), Chris Kuehl (UMD), Tim Fergestad (UMD) Center row (l to r) Vasalisa Kiselevich (UMD), Lisa Bolin (UMD), Ruslan Arbit (Moscow), Dan Gregory (SWSU) Front row (l to r) Michelle DeRider (Macalester), Karen Goodell (UMD), Jennifer Johnson (UMD), Greg Fisher (UW-La Crosse), Jun Zhu (UMD). Missing from photo, Kris Saxrud (UMD)*

Student	Mentor	Description of Research
Ruslan Arbit	Carlson	The Synthesis of Butyrolactones
Lisa Bolin	Thompson	Rare Earth Complexes of Trifluoroacetylacetone
Michelle DeRider	Caple	ArSCl Mediated Coupling with Nucleophiles
Tim Fergestad	Eide	Iron Study in Yeast
Gregory Fisher	Harriss	Quantitative Structure - Activity Relationships
Karen Goodell	Caple	ArSCl Mediated Couplings of Glucol with Silyl Ketone Acetals
Dan Gregory	Caple	ArSCl Adducts of Glucol Derivatives in the Preparation of C-Glucosides
Vasilisa Kiselevich	Caple	ArSCl Mediated Coupling with Nucleophiles
Chris Kuehl	Caple	ArSCl Adducts of Glucol Derivatives in the Preparation of C-Glucosides
Jennifer Johnson	Drewes	Determination of the Specific Glucose Transporters in the Cell Lines of Neuroblastoma, Astrocytoma and Medulloblastoma
Eric Maki	Carlson	Lactone Synthesis via the Use of Dianion Intermediates
Shao-En Ong	Carlson	"Y Aromaticity" in Synthetic Intermediates
Dana Reed	Carlson	Preparation of the Synthetic Equivalent of α,β Dianions of Ketones
Kris Saxrud	Anderson	The Identification of the Active Site Residues of the Enzyme, Cyanase
Jun Zhu	Magnuson	Determination of the Crystal and Molecular Structure of Pd Complexes

Items of Special Interest . . .

• Dr. Katya McLane accepted an offer of a position on the chemistry faculty to support the new program in biochemistry and molecular biology. Katya is currently completing a postdoctoral appointment at Scripps Research Institute and, although not officially joining us until Fall, 1994, she has been actively involved in a variety of activities surrounding the new program.

• Bob Carlson continued his efforts to help establish a new research initiative on Lake Superior. His interim directorship of the U of M Institute for Lake Superior Research has focused on responding to the International Joint Commission (IJC) designation of Lake Superior as " . . . a demonstration lake for the virtual elimination (e.g. 'zero discharge') of persistent toxic pollutants." In related activities, he was appointed by the Governor to the Lake Superior Center Authority to manage the construction a major freshwater education center and aquarium in Duluth and was elected to the IJC Binational Program's Advisory Forum for implementation of "zero discharge" to Lake Superior.

• The construction of a new major chemical storage area and hazardous waste handling facility was completed to respond to increasing requirements for the safe storage and disposal of chemicals used on campus.

• The conversion of the organic laboratory to the use of microware was completed during the spring and summer. The desired reduction in chemical usage and length of time per experiment has been realized. The judicious use of larger scale equipment for some synthesis experiments has been maintained to provide a more natural connection to subsequent laboratory experiences in industry and graduate school.

• Although the overall student population on campus has remained about 7600, record numbers of students were enrolled in chemistry for the fall quarter:

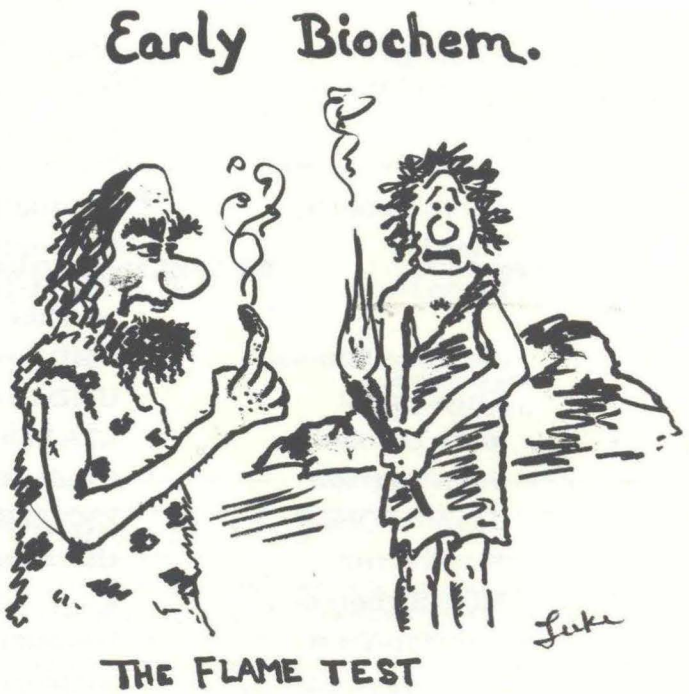
- General Chemistry (Chem 1110, 1130) - 314
- Organic Chemistry (Chem 3512, 3540) - 244
- Physical Chemistry - 70
- Analytical Chemistry (Chem 3210) - 64

There are currently 26 graduate students in the department.

• Summer '93 also saw the completion of many years of service and the retirement of Mrs. Shu Chen Kuo as laboratory services coordinator. An invitation to come back anytime to watch us work was offered and accepted. With Mrs. Kuo's retirement, we were fortunate to obtain the services of Mr. David Marklund, a 1973 alumnus of our department. Dave's considerable laboratory and administrative experience has made for a smooth transition.

• At its June 28, 1993 meeting, the Russian Academy of Sciences announced that Ron Caple was awarded an honorary doctorate to recognize his long-standing collaborative research activities with the Russian scientific community and his efforts to promote peace and understanding between our two countries. (See 1992 "TRANSITIONS" for more background.)

• The Department of Chemistry has purchased three Keithley Model 575 data acquisition systems and supporting computers. The accompanying software offers recording capabilities that allow creation and replay of sequences of operations. Tom Bydalek is adapting these powerful systems to be used in the advanced laboratory sequences.



1992 -1993 UMD Chemistry Graduates: *Back row (l to r) Kevin Hurd, Todd Wambach, Chris Kuehl, Chris Gonderzik, Thao Ho, John Mattson, Ban Van Tran, Tim Zensen, Mike Signorelli, Scott Dawson. Front row (l to r) Becky Franke, Jennifer Johnson, Teresa Cole, Karen Goodell, Kris Saxrud, Jennifer Olson. Missing from photo, Brad Browers, Mark Lovdahl.*

1993 UMD Chemistry Graduates

Name	Current Plans
Brad Browers	Employment
Teresa Cole	Graduates Spring 1994
Becky Franke	Employment
Chris Gonderzik	Medical College of Wisconsin - Milwaukee
Karen Goodell	Graduate School
Thao Ho	Graduates Spring 1994
Kevin Hurd	U of M-Twin Cities Graduate School in Chemical Engineering
Jennifer Johnson	UMD Graduate Program
Chris Kuehl	UMD Graduate Program
Mark Lovdahl	EPA Lab, Duluth/ UMD Graduate Program
John Mattson	Graduate School
Jennifer Olson	ERA Laboratory, Duluth
Kris Saxrud	UMD Graduate Program
Mike Signorelli	Employment
Ban Van Tran	Graduate School
Todd Wambach	Employment
Tim Zensen	Graduate School

1992-1993 Chemistry Awards & Honors

American Institute of Chemists Award - (engraved medal) - Based on high scholastic standing, leadership and character; a senior chemistry major planning to pursue a career in chemistry.	Becky Franke
Gary E. Glass Award - (monetary award) - Based on high scholastic attainment in Chemistry courses.	Chris Gonderzik Kris Saxrud Eric Maki
Casmir Ilenda Award for Outstanding Undergraduate Research - (monetary award) - Based on outstanding accomplishment in undergraduate research.	Chris Kuehl
F. J. Glick Memorial Award - (monetary award) - Based on outstanding academic record as a chemistry junior, along with interests in community and society.	Eric Maki
F. B. Moore Award - (monetary award) - Based on scholarship and excellence as a sophomore chemistry major.	Dana Reed
CRC Freshman Chemistry Award - (CRC Handbook of Chemistry and Physics) - Based on outstanding academic achievement in the General Chemistry sequence 1110-11-12.	Angela Simonson Richard Powell
- Based on outstanding academic achievement in the General Chemistry sequence 1130-31-32.	Charles Hawkinson
Lake Superior Section of ACS - (monetary award and Certificate) Outstanding graduating chemistry major award.	John Mattson
Chemistry Department's Outstanding Teaching Assistant for 1992 -93	Jay Wiedemann
Seniors Graduating with department honors	John Mattson Bryan Nelson

TRANSITIONS - Volume II, 1993

Editor: Dr. Robert Carlson

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Alumni Update

(Please send us a note so we can update our files.)

Name : _____

Class of : _____

What's news? (promotions, special recognitions, civic involvement, family, research activity...)

_____

_____

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_____

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